Course Title: Web Design
Subject: Computer Science
Grade Level: 9 – 12
Duration: 0.5 year (approx. 18 weeks)
Prerequisite: None
Elective or Required: Elective

Computer Science, Engineering, and Technology Mission Statement
Since computational thinking and problem solving are integral parts of our lives and 21st century learning, students must be actively involved in their Computer Science, Engineering, and Technology (CSET) education. The CSET curricula will emphasize thinking skills through a balance of computation, intuition, common sense, logic, design, analysis, and technology. Students will use a combination of technology and critical thinking to solve real-world problems. To achieve these goals, students will be taught a standards-based curriculum that is aligned with the New Jersey Curriculum Standards.

Course Description:
Web Design is an elective course that introduces students to the basics of developing a web site. This course will provide students with an overview of the technology that drives the Web and the evolution of the current web development standards. Students will be taught the most recent versions of HTML and Cascading Style Sheets for authoring web pages. The basics of web graphics will be introduced using Adobe Photoshop as the graphic editor. Notepad will be used as a web-authoring tool. As a culminating activity, students will work in collaboration to design, develop, and present an original web site on a school appropriate topic.

A variety of methods of instruction will be used including but not limited to lecture, reading and exercises from web resources, analysis of existing web sites, and group and individual web development assignments. The course will meet for five 42-minute class periods per week for one half year.

Author: Kevin George
Date Submitted: Summer 2016
Resources

Due to the changing nature of web development and design technologies, a textbook is not used for this course. The World Wide Web Consortium (W3C) oversees the development of the web and sets the standards for HTML, XHTML and CSS. The tutorials available on the W3C site are used as resources for this curriculum. Other web related tutorials and resource sites are also used. The teacher for this course will post the links to the tutorials, class notes and assignments on the faculty page available on the Glen Ridge High School web site.

- **W3C: Getting Started with HTML**, http://www.w3.org/MarkUp/Guide/
- **W3C: More Advanced HTML features**, http://www.w3.org/MarkUp/Guide/Advanced.html
- **W3C: A Touch of Style for HTML**, http://www.w3.org/MarkUp/Guide/Style
- **W3C: Starting with HTML and CSS**, http://www.w3.org/Style/Examples/011/firstcss
- **W3C: Introduction to CSS**, http://www.w3.org/Style/LieBos2e/enter/
- **W3C: CSS Trips & Tricks**, http://www.w3.org/Style/Examples/007/
- **W3 Schools web tutorials**, http://www.w3schools.com/web/default.asp
- **Lissa explains it all tutorial**, http://www.lissaexplains.com/basics.shtml
- **VisiBone’s Webmaster Color Lab**, http://html-color-codes.com/
- **Petr Stanicek’s Color Scheme Designer**, http://colorschemedesigner.com/
- **Glen Ridge High School Faculty pages**: http://www.glenridge.org/grhs/faculty.html

Software Tools

- Notepad text editor
- Google Chrome (or other web browser, such as Safari, Internet Explorer, etc)
- Adobe Photoshop
- Internet access

Textbooks used as reference

# Curriculum Standards

## Technology

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1.12.A.1</td>
<td>Create a personal digital portfolio which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.</td>
</tr>
<tr>
<td>8.1.12.A.2</td>
<td>Produce and edit a multi-page digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review.</td>
</tr>
<tr>
<td>8.1.12.C.1</td>
<td>Develop an innovative solution to a real world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community.</td>
</tr>
<tr>
<td>8.1.12.D.1</td>
<td>Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.</td>
</tr>
<tr>
<td>8.1.12.D.2</td>
<td>Evaluate consequences of unauthorized electronic access (e.g., hacking) and disclosure, and on dissemination of personal information.</td>
</tr>
<tr>
<td>8.1.12.D.3</td>
<td>Compare and contrast policies on filtering and censorship both locally and globally.</td>
</tr>
<tr>
<td>8.1.12.D.4</td>
<td>Research and understand the positive and negative impact of one's digital footprint.</td>
</tr>
<tr>
<td>8.1.12.D.5</td>
<td>Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.</td>
</tr>
<tr>
<td>8.1.12.E.1</td>
<td>Research and evaluate the impact on society of the unethical use of digital tools and present your research to peers.</td>
</tr>
<tr>
<td>8.1.12.E.2</td>
<td>Research the historical tensions between environmental and economic considerations as driven by human needs and wants in the development of a technological product, and present the competing viewpoints to peers for review.</td>
</tr>
<tr>
<td>8.2.12.B.1</td>
<td>Research and analyze the impact of the design constraints (specifications and limits) for a product or technology driven by a cultural, social, economic or political need and publish for review.</td>
</tr>
<tr>
<td>8.2.12.B.2</td>
<td>Analyze ethical and unethical practices around intellectual property rights as influenced by human wants and/or needs.</td>
</tr>
<tr>
<td>8.2.12.B.3</td>
<td>Investigate a technology used in a given period of history, e.g., stone age, industrial revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.</td>
</tr>
<tr>
<td>8.2.12.B.4</td>
<td>Research the historical tensions between environmental and economic considerations as driven by human needs and wants in the development of a technological product, and present the competing viewpoints to peers for review.</td>
</tr>
<tr>
<td>8.2.12.C.1</td>
<td>Explain how open source technologies follow the design process.</td>
</tr>
<tr>
<td>8.2.12.C.2</td>
<td>Analyze a product and how it has changed or might change over time to meet human needs and wants.</td>
</tr>
<tr>
<td>8.2.12.D.3</td>
<td>Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D printers, CAD software) in the design, development and creation of a technological product or system.</td>
</tr>
<tr>
<td>8.2.12.D.6</td>
<td>Synthesize data, analyze trends and draw conclusions regarding the effect of a technology on the individual, society, or the environment and publish conclusions.</td>
</tr>
<tr>
<td>8.2.12.E.1</td>
<td>Demonstrate an understanding of the problem-solving capacity of computers in our world.</td>
</tr>
<tr>
<td>8.2.12.E.2</td>
<td>Analyze the relationships between internal and external computer components.</td>
</tr>
<tr>
<td>8.2.12.E.3</td>
<td>Use a programming language to solve problems or accomplish a task (e.g., robotic functions, website designs, applications, and games).</td>
</tr>
<tr>
<td>8.2.12.E.4</td>
<td>Use appropriate terms in conversation (e.g., troubleshooting, peripherals, diagnostic software, GUI, abstraction, variables, data types and conditional statements).</td>
</tr>
</tbody>
</table>

## 21st Century Life and Careers

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.2.12.C.1</td>
<td>Review career goals and determine steps necessary for attainment.</td>
</tr>
<tr>
<td>9.2.12.C.3</td>
<td>Identify transferable career skills and design alternate career plans.</td>
</tr>
<tr>
<td>9.2.12.C.5</td>
<td>Research career opportunities in the United States and abroad that require knowledge of world languages and diverse cultures.</td>
</tr>
<tr>
<td>9.2.12.C.6</td>
<td>Investigate entrepreneurship opportunities as options for career planning and development.</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
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<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>9.2.12.C.7</td>
<td>Examine the professional, legal, and ethical responsibilities for both employers and employees in the global workplace.</td>
</tr>
<tr>
<td>9.3.IT-PRG.1</td>
<td>Analyze customer software needs and requirements.</td>
</tr>
<tr>
<td>9.3.IT-PRG.2</td>
<td>Demonstrate the use of industry standard strategies and project planning to meet customer specifications.</td>
</tr>
<tr>
<td>9.3.IT-PRG.3</td>
<td>Analyze system and software requirements to ensure maximum operating efficiency.</td>
</tr>
<tr>
<td>9.3.IT-PRG.4</td>
<td>Demonstrate the effective use of software development tools to develop software applications.</td>
</tr>
<tr>
<td>9.3.IT-PRG.5</td>
<td>Apply an appropriate software development process to design a software application.</td>
</tr>
<tr>
<td>9.3.IT-PRG.6</td>
<td>Program a computer application using the appropriate programming language.</td>
</tr>
<tr>
<td>9.3.IT-PRG.7</td>
<td>Demonstrate software testing procedures to ensure quality products.</td>
</tr>
<tr>
<td>9.3.IT-PRG.8</td>
<td>Perform quality assurance tasks as part of the software development cycle.</td>
</tr>
</tbody>
</table>

**Mathematics**

| Math Practices 1 | Make sense of problems and persevere in solving them.                        |
| Math Practices 2 | Reason abstractly and quantitatively.                                        |
| Math Practices 3 | Construct viable arguments and critique the reasoning of others.             |
| Math Practices 4 | Model with mathematics.                                                      |
| Math Practices 5 | Use appropriate tools strategically.                                        |
| Math Practices 6 | Attend to precision.                                                         |
| Math Practices 7 | Look for and make use of structure.                                         |
| Math Practices 8 | Look for and express regularity in repeated reasoning.                      |

**Social Studies**

<table>
<thead>
<tr>
<th>Social Studies</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.3.12.D.1</td>
<td>Analyze the impact of current governmental practices and laws affecting national security and/or individual civil rights/privacy</td>
</tr>
<tr>
<td>6.1.12.A.16.a</td>
<td>Examine the impact of media and technology on political and social issues in a global society.</td>
</tr>
</tbody>
</table>

**Visual and Performing Arts**

<table>
<thead>
<tr>
<th>Visual and Performing Arts</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.12.D.2</td>
<td>Translate literary, musical, theatrical, and dance compositions by using them as stimulus/inspiration for corresponding visual artworks.</td>
</tr>
</tbody>
</table>

**English Language Arts**

<table>
<thead>
<tr>
<th>English Language Arts</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJSLSA.R1</td>
<td>Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.</td>
</tr>
<tr>
<td>NJSLSA.R2</td>
<td>Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.</td>
</tr>
<tr>
<td>NJSLSA.R4</td>
<td>Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.</td>
</tr>
<tr>
<td>NJSLSA.R7</td>
<td>Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.</td>
</tr>
<tr>
<td>RI.11-12.4</td>
<td>Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).</td>
</tr>
<tr>
<td>RI.11-12.7</td>
<td>Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.</td>
</tr>
<tr>
<td>NJSLSA.W4</td>
<td>Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</td>
</tr>
<tr>
<td>Standard</td>
<td>Description</td>
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</tr>
<tr>
<td>NJSLSA.W6</td>
<td>Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.</td>
</tr>
<tr>
<td>NJSLSA.W7</td>
<td>Draw evidence from literary or informational texts to support analysis, reflection, and research.</td>
</tr>
<tr>
<td>NJSLSA.W9</td>
<td>Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)</td>
</tr>
<tr>
<td>W.11-12.6</td>
<td>Use technology, including the Internet, to produce, share, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.</td>
</tr>
<tr>
<td>W.11-12.7</td>
<td>Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</td>
</tr>
</tbody>
</table>
Web Design

Unit 1: INTRODUCTION TO WEB DESIGN

Approximate # Of Weeks: 1

Essential Questions:
- What is the web?
- How are web pages created?
- What is HTML?

Upon completion of this unit students will be able to:
- Explain how a web page is made and displayed.
- Use the Notepad Text editor to create a web page.
- Describe elements of effective web sites.
- Explain and use the basic syntax of an HTML element.
- Explain and create a basic HTML document.

Interdisciplinary Standards
- 8.1.12 (A.1-2, C.1, D.1-5, F.1); 8.2.12 (B.1, B.3, C.1, D.3, E.1, E.3-4); 9.2.12 (C.1, C.3, C.5-7, C.9); 9.3.IT-PRG.1-8; 6.3.12.D.1; 1.1.12.D.2; NJSLSA (R1-2, R4,R7, W4, W6, W9); RI.11-12 (4, 7); W.11-12 (4, 6)

Activities (All STEAM Activities):
- Class Activity: Working in groups, students will select 5 web sites and analyze/discuss what elements add or detract from the effectiveness of the site.
- Lab: Students will create and save a basic HTML document.
- Unit quiz

Enrichment Activities:
- Journal Entry: Explain and provide examples of 3 elements of effective web sites.

Methods of Assessments/Evaluation:
- Student responses / Oral evaluation
- Graded projects
- Tests and quizzes

Resources/Including Online Resources
- Teacher Webpage
- Resources listed above in Resources section
Web Design

Unit 2: BASIC ELEMENTS OF AN HTML PAGE

Approximate # Of Weeks: 2

Essential Questions:
- How does one create a web page?
- What is the structure of an HTML page?
- What are HTML tags?

Upon completion of this unit students will be able to:
- Use the Notepad text editor to create and modify HTML pages.
- Identify and use the doctype and html tags.
- Identify and use the basic sections of a web page: head and body.
- Explain and use the title HTML tag and identify where it is displayed by the browser.
- Identify and use the basic web page building blocks: paragraphs, headers.
- Explain and use HTML comments.
- Explain and use the em/i, strong/bold, br, and hr HTML tags.
- Explain the difference between elements, attributes and values of an HTML tag.
- Explain and use the img HTML tag to add an image to a web page, including the src, alt, width, and height attributes.
- Explain and select effective image formats for the web.
- Explain and use proper naming conventions for HTML pages.
- Identify the default style for HTML elements.
- Explain, identify and solve common HTML errors.

Interdisciplinary Standards
- 8.1.12 (A.1-2, C.1, D.1-5, F.1); 8.2.12 (B.1, B.3, C.1, D.3, E.1, E.3-4); 9.2.12 (C.1, C.3, C.5-7, C.9); 9.3.IT-PRG.1-8; 6.3.12.D.1; 1.1.12.D.2; NJSLSA (R1-2, R4,R7, W4, W6, W9); RI.11-12 (4, 7); W.11-12 (4, 6)

Activities (All STEAM Activities):
- Class activity: Students will develop the “My First Webpage.html” web page using step-wise development which will include paragraphs, line breaks, headers of different sizes, an image, and a title. This page will be built upon as each new skill is learned.
- Lab: Students will develop a web page of their own design on a selected topic containing required HTML elements.
- Lab: Students will identify and correct HTML errors on existing HTML pages.
- Unit test and quiz.

Enrichment Activities:
- Journal entry: Students will select 3 of the HTML elements studied in this unit and explain their use and attributes.
Methods of Assessments/Evaluation:
- Student responses / Oral evaluation
- Graded projects
- Tests and quizzes

Resources/Including Online Resources
- Teacher Webpage
- Resources listed above in Resources section
Web Design

Unit 3: INTRODUCTION TO CASCADING STYLE SHEETS (CSS)

Approximate # Of Weeks: 2

Essential Questions:
- What are Cascading Style Sheets?
- What are Inline Styles?
- How can one use CSS to format a web page?

Upon completion of this unit students will be able to:
- Explain and use CSS style definitions to customize the appearance of HTML pages.
- Articulate the advantages of separating the content and formatting of HTML pages.
- Explain and use embedded style sheets.
- Explain and code CSS rules to specify font characteristics, text and background color, text alignment, background images, background tiling, box-related properties (padding, borders and margins).
- Explain and use inline style definitions.
- Explain and use spans.
- Explain the difference between Serif and Sans-Serif fonts and explain the design guidelines for selecting fonts for HTML pages.
- Explain how colors are identified and coded in HTML pages.
- Explain how colors are rendered by a monitor and use an online color wheel to determine hexadecimal color codes.
- Explain and apply effective color guidelines for HTML pages.
- Design and implement appealing and effective web pages using HTML and CSS for formatting.

Interdisciplinary Standards
- 8.1.12 (A.1-2, C.1, D.1-5, F.1); 8.2.12 (B.1, B.3, C.1, D.3, E.1, E.3-4); 9.2.12 (C.1, C.3, C.5-7, C.9); 9.3.IT-PRG.1-8; 6.3.12.D.1; 1.1.12.D.2; NJSLSA (R1-2, R4,R7, W4, W6, W9); RI.11-12 (4, 7); W.11-12 (4, 6)

Activities (All STEAM Activities):
- Class activity: Students will customize the appearance of their “My First Webpage.html” page using step wise development to include CSS style definitions to modify the font and color of HTML elements.
- Lab: Students will modify an existing web page to add an embedded style sheet and inline styles.
- Project: Students will develop the main page of a personal web site using HTML to include the content and CSS to customize the appearance of the page.
- Unit test and quiz.
Enrichment Activities:

- Journal entry: Students will explain the format of a CSS style rule and provide an example.

Methods of Assessments/Evaluation:

- Student responses / Oral evaluation
- Graded projects
- Tests and quizzes

Resources/Including Online Resources

- Teacher Webpage
- Resources listed above in *Resources* section
Web Design

Unit 4: ADOBE PHOTOSHOP BASICS

Approximate # Of Weeks: 2

Essential Questions:
- How can Adobe Photoshop be used to improve the appearance of photographs?
- How can Adobe Photoshop be used to create new images for use on a web site?
- How can Adobe Photoshop be used to create animated images?

Upon completion of this unit students will be able to:
- Explain and use the Adobe Photoshop work area to create and edit images for the web.
- Explain and use the Adobe Photoshop toolbox and palettes.
- Explain and use the Adobe Photoshop help facility.
- Explain and use the image adjustments features of Photoshop to adjust the brightness, contrast, hue, saturation, and other settings of an image.
- Explain and use the built-in filters of Photoshop.
- Explain and use the editing tools in the toolbox, such as eraser, blur, smudge, dodge, burn, etc.
- Explain and use the selection tools in the toolbox, such as rectangular marquee, elliptical marquee, lasso, and magic wand.
- Explain and use the selection tools to copy and paste items from one picture into another.
- Explain, create, delete, rename, duplicate, resize, distort, warp, and change the stacking order of layers.
- Explain and modify the opacity of a layer.
- Explain and use fill and gradient layers.
- Resize, rotate and crop images.
- Explain and use the text tool to add text to an image.
- Create, modify and save images in formats appropriate for the web.
- Explain and use Adobe Photoshop to create animated images.

Interdisciplinary Standards
- 8.1.12 (A.1-2, C.1, D.1-5, F.1); 8.2.12 (B.1, B.3, C.1, D.3, E.1, E.3-4); 9.2.12 (C.1, C.3, C.5-7, C.9); 9.3.IT-PRG.1-8; 6.3.12.D.1; 1.1.12.D.2; NJSLSA (R1-2, R4,R7, W4, W6, W9); RI.11-12 (4, 7); W.11-12 (4, 6)

Activities (All STEAM Activities):
- Class activity: Students will edit an image using step wise development using all of the tools detailed in the objectives above. The image will be saved in both Photoshop format and a web appropriate format.
- Lab: Students will combine several images found online into one image using Layers.
- Project: Students will design and develop a “collage” image of their own original design using pictures from the Internet. The collage must have a theme. The image will be included in a web page that explains the theme, the Photoshop tools and techniques used to create the collage and displays the individual images used.
- Class activity: Students will create an animated image using step wise development.
- Lab: Students will create an animated image using images downloaded from the web.
- Unit test and quiz.

**Enrichment Activities:**
- Lab: Students will improve the appearance of a photograph using the image adjustment tools.

**Methods of Assessments/Evaluation:**
- Student responses / Oral evaluation
- Graded projects
- Tests and quizzes

**Resources/Including Online Resources**
- Teacher Webpage
- Resources listed above in *Resources* section
Web Design

Unit 5: LISTS, LINKS, & SYMBOLS

Approximate # Of Weeks: 1

Essential Questions:
- How can lists be used to organize a web page?
- How are links used to connect different web pages?
- How does one use special symbols like © on a web page?
- What is intellectual property and how does it apply to the web?

Upon completion of this unit students will be able to:
- Explain and include list elements, *ol*, *ul*, and *li*, in HTML pages.
- Explain, compare and use absolute and relative Uniform Resource Locators (URLs).
- Explain and use absolute links to other web pages in an HTML page.
- Explain and use relative links to other local pages in an HTML page.
- Explain and use links to a section of the current HTML page.
- Explain and use images as labels for links.
- Explain and use the *target* attribute of links to open a new browser tab/window.
- Explain and use the CSS style definitions to change the appearance of links.
- Explain and use special symbols to include special characters (&copy;, &lt;, &gt;, &nbsp;).
- Explain the concepts of intellectual property and copyright as it relates to ethical use of media found on the web.

Interdisciplinary Standards
- 8.1.12 (A.1-2, C.1, D.1-5, F.1); 8.2.12 (B.1, B.3, C.1, D.3, E.1, E.3-4); 9.2.12 (C.1, C.3, C.5-7, C.9); 9.3.IT-PRG.1-8; 6.3.12.D.1; 1.1.12.D.2; NJSLSA (R1-2, R4,R7, W4, W6, W9); RI.11-12 (4, 7); W.11-12 (4, 6)

Activities (All STEAM Activities):
- Class activity: Students will add to their “My First Webpage.html” page using step wise development to include lists, links, and symbols, and CSS definitions for formatting the elements.
- Lab: Students will write the HTML tags to create links using relative URLs given a directory structure.
- Lab: Students will modify their personal web site to include a new page that includes links to all completed assignment pages and corresponding descriptions formatted as a list. The new page will use CSS for formatting.
- Unit test and quiz.

Enrichment Activities:
- Lab: Students will identify the errors in an HTML page containing links and lists.
- Project: Students will design and develop a web page summarizing a current online news article and their reaction to the article. The page will include a link to original article page.
Methods of Assessments/Evaluation:
- Student responses / Oral evaluation
- Graded projects
- Tests and quizzes

Resources/Including Online Resources
- Teacher Webpage
- Resources listed above in Resources section
Approximate # Of Weeks: 1

Essential Questions:
- How can scrolling text and sounds make a web site more interesting and dynamic?
- How can classes be used to add CSS styles to individual elements of a web page, without the drawbacks of inline styles?
- How can classes be used to add CSS styles to different elements that one wants to have a similar look?

Upon completion of this unit students will be able to:
- Explain and use the `marquee` tag to present scrolling content.
- Explain and select appropriate sound file formats for the web.
- Explain and use sound files on an HTML page.
- Explain and add classes to elements on an HTML page.
- Explain and use CSS definitions to change the appearance of classes.

Interdisciplinary Standards
- 8.1.12 (A.1-2, C.1, D.1-5, F.1); 8.2.12 (B.1, B.3, C.1, D.3, E.1, E.3-4); 9.2.12 (C.1, C.3, C.5-7, C.9); 9.3.IT-PRG.1-8; 6.3.12.D.1; 1.1.12.D.2; NJSLSA (R1-2, R4,R7, W4, W6, W9); RL.11-12 (4, 7); W.11-12 (4, 6)

Activities (All STEAM Activities):
- Class activity: Students will add to their “My First Webpage.html” page using step wise development to include marquees, sounds, and classes, and CSS definitions for formatting the elements.
- Project: Students will design and develop a web site on their favorite celebrity, including many of the elements learned in this and previous units, including the use of classes. The site will have at least three pages, with a navigation menu linking the pages together.
- Unit test and quiz.

Enrichment Activities:
- Lab: Students will identify the errors in an HTML page containing sounds and classes.

Methods of Assessments/Evaluation:
- Student responses / Oral evaluation
- Graded projects
- Tests and quizzes

Resources/Including Online Resources
- Teacher Webpage
- Resources listed above in Resources section
Web Design

Unit 7: EXTERNAL CSS FILES & HTML TABLES

Approximate # Of Weeks: 2

Essential Questions:
- How can one apply the same CSS styles to multiple pages of a site, without having to re-code the styles on each page?
- How does one place a table of data on a web page?
- How does one use a table to organize the content of a web page?
- How can CSS be used to format a table?

Upon completion of this unit students will be able to:
- Explain and create an external CSS file from a set of existing or new styles.
- Explain and use the link tag to connect the CSS files to multiple pages on a site.
- Explain and use HTML tables to display tabular information on a web page.
- Explain and use HTML tables to format the layout of a web page.
- Explain and use the HTML tags to create table rows.
- Explain and use the HTML tags to create table columns.
- Explain and use the attributes of HTML table tags to span multiple columns or rows of a table.
- Explain and use the attributes of HTML table tags to change the width, add borders, and control the spacing for rows and columns of tables.
- Explain and use CSS style definitions to customize the appearance of HTML tables.
- Design and implement appealing and effective web pages using HTML tables and CSS.

Interdisciplinary Standards
- 8.1.12 (A.1-2, C.1, D.1-5, F.1); 8.2.12 (B.1, B.3, C.1, D.3, E.1, E.3-4); 9.2.12 (C.1, C.3, C.5-7, C.9); 9.3.IT-PRG.1-8; 6.3.12.D.1; 1.1.12.D.2; NJSLSA (R1-2, R4,R7, W4, W6, W9); RI.11-12 (4, 7); W.11-12 (4, 6)

Activities (All STEAM Activities):
- Class activity: Students will add to their “My First Webpage.html” page using step wise development to utilize an external CSS file for styles. Students will then connect this same external CSS file to another page, to see that the styles are the same.
- Class activity: Students will develop an HTML page using step wise development to include a table containing multiple rows and columns of data. The appearance of the page will be customized using CSS.
- Lab: Students will develop an HTML page that uses a table for formatting, where they will place an image next to a paragraph.
- Project: Students will create a Jeopardy board HTML page, using a table. The table cells will be links to other pages that have questions and answers. The Jeopardy theme song will be embedded in the Jeopardy board.
- Unit test and quiz.
Enrichment Activities:

- Lab: Students will develop an HTML page that uses a table for very complex formatting. For instance, the page may have a three-column layout, with complex HTML (including images, links, and tables) in each column.
- Lab: Students will identify the errors in an HTML page containing a table with multiple rows and columns.
- Lab: Students will determine and write the HTML tags to create a table of a specified format given information in the form of raw text.
- Journal entry: Students will explain the HTML tags used to create a table and provide an example of a web page that utilizes a table.

Methods of Assessments/Evaluation:

- Student responses / Oral evaluation
- Graded projects
- Tests and quizzes

Resources/Including Online Resources

- Teacher Webpage
- Resources listed above in Resources section
Web Design

Unit 8: DIVS & POSITIONING

Approximate # Of Weeks: 2

Essential Questions:
• How can web pages be compartmentalized and formatted using Divs?
• What more advanced methods are there for organizing the layout of a web page with a more complex design?

Upon completion of this unit students will be able to:
• Explain and use the div tag to identify a block-level division of text.
• Explain and use the id and class attributes in div tags.
• Explain and apply CSS style rules to div id/classes to change the appearance of the div (including background color, width, height, borders, and positioning).
• Explain and use absolute positioning, along with the left and top style properties.
• Design and implement appealing and effective web pages using divs and CSS.

Interdisciplinary Standards
• 8.1.12 (A.1-2, C.1, D.1-5, F.1); 8.2.12 (B.1, B.3, C.1, D.3, E.1, E.3-4); 9.2.12 (C.1, C.3, C.5-7, C.9); 9.3.IT-PRG.1-8; 6.3.12.D.1; 1.1.12.D.2; NJSLSA (R1-2, R4,R7, W4, W6, W9); RI.11-12 (4, 7); W.11-12 (4, 6)

Activities (All STEAM Activities):
• Class activity: Students will develop an HTML page using step wise development to include div tags with ids/classes and CSS definitions for formatting the elements.
• Lab: Students will create a web page that uses divs and absolute positioning through CSS to create the page layout.
• Project: Students will create a web site on a chosen topic, with at least three pages, that uses a complex but common layout using divs and absolute positioning, with an external style sheet. Common ids/classes should be used on each page to create a common layout.
• Unit test and quiz.

Enrichment Activities:
• Lab: Students will identify the positions (left and top) of different divs in an HTML page that has been printed with an overlaid grid.
• Journal entry: Students will explain the div tag and discuss the appropriate uses of the attributes id and class.

Methods of Assessments/Evaluation:
• Student responses / Oral evaluation
• Graded projects
• Tests and quizzes

Resources/Including Online Resources
• Teacher Webpage
• Resources listed above in Resources section
Web Design

Unit 9: HISTORY AND FUNDAMENTALS OF THE WEB

Approximate # Of Weeks: 0.5

Essential Questions:
- What is the web?
- How are web pages created?
- What is HTML?

Upon completion of this unit students will be able to:
- Explain the difference between the World Wide Web and the Internet.
- Explain and use a Uniform Resource Locator (URL)
- Explain the function of web servers and web browsers.

Interdisciplinary Standards

Activities (All STEAM Activities):
- Class Activity: Working in pairs, students will complete a jigsaw organizer on the technology that drives the Web and the evolution of standards.

Enrichment Activities:
- Journal Entry: Explain where a web page available on the internet is saved and how it is rendered by a browser.

Methods of Assessments/Evaluation:
- Student responses / Oral evaluation
- Graded projects
- Tests and quizzes

Resources/Including Online Resources
- Teacher Webpage
- Resources listed above in Resources section
Web Design

Unit 10 (TIME PERMITTING): CSS3 EFFECTS & ANIMATIONS

Approximate # Of Weeks: 2

Essential Questions:
- How can CSS be used to add more complex effects to elements (i.e., rounded borders, shadows, reduced opacity, skew, etc)?
- How can CSS be used to animate various styles to achieve animation on a web page?

Upon completion of this unit students will be able to:
- Explain and use the `border` and `border-radius` CSS properties to apply borders and rounded borders to `divs`.
- Explain and use the `box-shadow` CSS property to apply shadows to `divs`.
- Explain and use the `text-shadow` CSS property to apply shadows to text.
- Explain and use the `transform` CSS property and its `translate`, `rotate`, `scale`, `skew`, and `matrix` methods to apply transformations to elements.
- Explain and use the `@keyframes` CSS rule to define an animation and the `animation` CSS property to apply that animation to an element.
- Explain and use browser support of certain newer styles, using the `–webkit` and `–ms` prefixes.
- Explain and use the `@font-face` CSS rule to define a customized web font.
- Design and implement appealing and effective web pages using `divs` and CSS.

Interdisciplinary Standards
- 8.1.12 (A.1-2, C.1, D.1-5, F.1); 8.2.12 (B.1, B.3, C.1, D.3, E.1, E.3-4); 9.2.12 (C.1, C.3, C.5-7, C.9); 9.3.IT-PRG.1-8; 6.3.12.D.1; 1.1.12.D.2; NJSLSA (R1-2, R4,R7, W4, W6, W9); RI.11-12 (4, 7); W.11-12 (4, 6)

Activities (All STEAM Activities):
- Class activity: Students will develop an HTML page using step wise development to use borders, shadows, transformations, web fonts, and animations, including the `–webkit` and `–ms` browser support prefixes.
- Project: Students will design a web page with a short animation, including at least 3 animated elements, all placed inside an outer container div that will act as a movie screen. The 3 objects will interact with each other in a meaningful way (i.e., their animations should not seem unintentional or unplanned), either to tell a short story or show a short scene. There will be a heading on the page (this does not have to be an H1, H2, etc…), using a downloaded web font and the `@font-face` rule.
- Unit test and quiz.

Enrichment Activities:
- Lab: Students will have the screen of the animation project come onto the page in an animated fashion.
- Journal entry: Students will explain the purpose of browser support prefixes and why they are needed.
• Journal entry: Students will explain why web fonts should be used for unusual fonts in particular.

Methods of Assessments/Evaluation:
• Student responses / Oral evaluation
• Graded projects
• Tests and quizzes

Resources/Including Online Resources
• Teacher Webpage
• Resources listed above in Resources section
Web Design

Unit 11: FINAL PROJECT: CREATING AN ORIGINAL WEB SITE

Approximate # Of Weeks: 2.5

Essential Questions:
• How can the knowledge gained in this class be used in the real world?

Upon completion of this unit students will be able to:
• Work in a collaborative group to demonstrate the knowledge gained in this course in creating a full original web site.

Interdisciplinary Standards
• 8.1.12 (A.1-2, C.1, D.1-5, F.1); 8.2.12 (B.1, B.3, C.1, D.3, E.1, E.3-4); 9.2.12 (C.1, C.3, C.5-7, C.9); 9.3.IT-PRG.1-8; 6.3.12.D.1; 1.1.12.D.2; NJSLSA (R1-2, R4,R7, W4, W6-7, W9); RI.11-12 (4, 7); W.11-12 (4, 6-7)

Activities (All STEAM Activities):
• As a culminating activity, students will work collaboratively to design, develop, document and present an original web site. The final project will be pre-approved and graded according to a published rubric.

Enrichment Activities:
• Difficulty level of final project may be adjusted appropriately.

Methods of Assessments/Evaluation:
• Student responses / Oral evaluation
• Final project

Resources/Including Online Resources
• Teacher Webpage
• Resources listed above in Resources section
Web Design

Unit 12 (TIME PERMITTING): CREATING & MODIFYING WEB SITES USING AN ONLINE WEBSITE BUILDER

Approximate # Of Weeks: 2

Essential Questions:
- What is a WYSIWYG editor?
- How can an online WYSIWYG editor like Squarespace, Wix, or Weebly be used to create, edit, and publish web sites with templates?
- How can we use these online WYSIWYG editors for more advanced features, like photo galleries and slideshows, dynamic effects, and creating forms whose responses automatically populate into a spreadsheet.

Upon completion of this unit students will be able to:
- Explain the advantages and disadvantages of using an online What You See Is What You Get (WYSIWYG) editor such as Squarespace, Wix, or Weebly.
- Create, modify, save, and publish a site online, using a template.
- Create, modify, and delete pages in a site.
- Explain and create web page elements using an online WYSIWYG editor.
- Explain, view and modify the WYSIWYG generated HTML.
- Explain, create, and modify Cascading Style Sheets (CSS) definitions using the WYSIWYG CSS editor.

Interdisciplinary Standards
- 8.1.12 (A.1-2, C.1, D.1-5, F.1); 8.2.12 (B.1, B.3, C.1, D.3, E.1, E.3-4); 9.2.12 (C.1, C.3, C.5-7, C.9); 9.3.IT-PRG.1-8; 6.3.12.D.1; 1.1.12.D.2; NJSLSA (R1-2, R4,R7, W4, W6, W9); RI.11-12 (4, 7); W.11-12 (4, 6)

Activities (All STEAM Activities):
- Project: Students will create a new web site using an online WYSIWYG editor like Squarespace, Wix, or Weebly for their favorite school holidays. The site will include at least three pages, with navigation links present on all pages. The site be graded according to a rubric.
- Unit test and quiz.

Enrichment Activities:
- Project: Students will add advanced features to their holidays web site, including photo galleries and slideshows, dynamic effects, or forms whose responses automatically populate into a spreadsheet.
- Journal entry: Students will explain the advantages and disadvantages of using a WYSIWYG editor.

Methods of Assessments/Evaluation:
- Student responses / Oral evaluation
- Graded projects
- Tests and quizzes
Resources/Including Online Resources

- Teacher Webpage
- Resources listed above in Resources section